acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for estimating ~~calculating~~ an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules; and

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule;

wherein said output torque estimation means estimates ~~calculates~~ said output torque [by selecting one of the] based on torque characteristics of an engine of said drive train [and the torque characteristics of a torque converter of said automatic

transmission] when a ratio between an input revolution speed and an output revolution speed of ~~said~~ a torque converter of said automatic transmission [has exceeded] is greater than a [first] predetermined value, and based on torque characteristics of ~~a~~ said torque converter of said automatic transmission when said ratio is less than said predetermined value.

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~~6.~~ (Thrice Amended) [An automatic transmission control system] System for controlling selection of gear position for an automatic transmission of an automobile, [as defined in Claim 23, further] comprising:

weight estimation means for estimating a total weight of said automobile;

acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for estimating ~~calculating~~ an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules;

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule; and

a neural network which ~~receives~~ has stored therein values of at least a throttle valve opening and ~~an~~ said acceleration ~~so as to learn~~ of the automobile for learning values of a vehicle weight corresponding to the values ~~supplied beforehand~~;

wherein said vehicle weight estimation means estimates said vehicle weight by time-serializing each of at least said throttle valve opening and said acceleration and then supplying resultant time-serial signals to said neural network.

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4 ~~13.~~ (Thrice Amended) [An] System for controlling selection of gear position for an automatic transmission [control system for] of an automobile, [as defined in Claim 23, wherein] comprising:

weight estimation means for estimating a total weight of said automobile;

acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for ~~calculating~~ estimating an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules; and

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule;

wherein said vehicle weight estimation means estimates said vehicle weight of said automobile in response to a throttle valve opening signal and a vehicle speed signal in addition to said acceleration signal; and

wherein said output torque estimation means estimates said output torque in response to a revolution speed signal of an engine of said drive train and a turbine revolution speed signal of a torque converter of said automatic transmission.

5 ~~14.~~ (Thrice Amended) [An] System for controlling selection of gear position for an automatic transmission [control system for] of an automobile, [as defined in Claim 23,] comprising:

weight estimation means for estimating a total weight of said automobile;

acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for estimating ~~calculating~~ an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train

during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules; and

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule;

wherein said output torque estimation means has a first mode in which said output torque is estimated from a turbine revolution speed of a torque converter of said automatic transmission and a revolution speed of an engine of said drive train, and a second mode in which said output torque is estimated from a throttle valve opening of said engine and said revolution speed of said engine, one of said first and second modes being selected in response to a ~~revolution~~ [ration] ratio of said torque converter of said automatic transmission.

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~~21~~. (Amended) Method [according to Claim 18,] of controlling selection of gear position for automatic transmission of an automobile having means for storing a plurality of shift schedules for said automatic transmission, said method comprising the steps of:

first, calculating an estimated weight of said automobile;

second, determining acceleration of said automobile;

third, calculating a value for an output torque of said transmission based on torque characteristics of a drive train of said automobile and generating an output torque signal indicative of said output torque value;

fourth, estimating a running load of said automobile based on said estimated weight of said automobile, the acceleration, and the output torque signal;

fifth, selecting a shift schedule from among a plurality of shift schedules stored in said means for storing, based on the estimated running load and the estimated weight of the automobile; and

sixth, selecting a gear position of said automatic transmission based on the selected shift schedule;

wherein said [second] third step comprises calculating said output torque based on torque characteristics of an engine of said drive train when a ratio between an input revolution speed and an output revolution speed is greater than a predetermined value, and calculating said output torque based on torque characteristics of ~~a~~ said torque converter of said automatic transmission when said ratio is less than said predetermined value.

~~22~~. 7 (Amended) Method [according to Claim 20,] of controlling selection of gear position for automatic transmission

of an automobile having means for storing a plurality of shift schedules for said automatic transmission, said method comprising the steps of:

first, calculating an estimated weight of said automobile;

second, determining acceleration of said automobile;

third, calculating a value for an output torque of said transmission based on torque characteristics of a drive train of said automobile and generating an output torque signal indicative of said output torque value;

fourth, estimating a running load of said automobile based on said estimated weight of said automobile, the acceleration, and the output torque signal;

fifth, selecting a shift schedule from among a plurality of shift schedules stored in said means for storing, based on the estimated running load and the estimated weight of the automobile; and

sixth, selecting a gear position of said automatic transmission based on the selected shift schedule;

wherein said third step comprises calculating said output torque based on at least torque characteristics of a